PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	01 FEB 2006
Applicant's or agent's file reference 29112	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IL05/00048	13 January 2005 (13.01.2005)	13 January 2004 (13.01.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): G01T 1/166 and US Cl.: 250/363.04, 370.04, 363.02, 363.1

Applicant

V-TARGET TECHNOLOGIES LTD.

1. This opinion contains indications relating to the following items:

- [X] Box No. I — Basis of the opinion
- [ ] Box No. II — Priority
- [ ] Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV — Lack of unity of invention
- [X] Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI — Certain documents cited
- [ ] Box No. VII — Certain defects in the international application
- [ ] Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis(b)* that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	26 January 2006 (26.01.2006)	Kenneth Wieler Telephone No. 571-272-2986

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL05/00048

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL05/00048

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-32	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-32	NO
Industrial applicability (IA)	Claims 1-32	YES
	Claims NONE	NO

2. Citations and explanations:

Claims 1-32 lack novelty under PCT Article 33(2) as being anticipated by Madden et al (US 5,694,933).

Regarding claims 1, 23, 32 Madden discloses an apparatus and method for radiation based imaging of a non-homogeneous target having distinguishable regions therein (different organs or parts of an organ or tissue), the apparatus comprising: an imaging unit (22) configured to obtain radiation intensity data from the target region in the three spatial dimensions (X, Y and Z(depth)); and an image analysis unit (20) that analyzes the intensity data obtained in the three spatial dimensions and at least one other dimension (time), in order to map the distinguishable regions (see figures 1-3 and corresponding descriptions).

Regarding claims 2, 3 Madden discloses that the image analysis unit is configured to constrain image output to a subset of the mapped regions, thereby increasing the resolution of the image (i.e., through window setting in step 30K, the image output can be constrained to a particular subset of the target region, see Col. 21, lines 32-67).

Regarding claims 4, 5, 6, 24, 25, 26, 27 Madden discloses applying different (at least two) radioactive markers that have different takeup characteristics over time for respective regions, each of the radioactive markers having distinguishable radiation, where the image analyzing unit is configured to use this distinguishable feature as another dimension in order to carry out the mapping (see Col. 23, lines 1-65).

Regarding claims 7, 10 Madden discloses that the image analysis unit is configured to use the mapping to generate an image comprising the regions as distinct entities (see Col. 24, lines 5-49).

Regarding claims 8-12 Madden discloses that the image analysis unit is configured to use the mapping to generate an image showing only a subset of the region and exclude all others (see Col. 28, line 1-Col. 29, line 10).

Regarding claim 16 Madden discloses that the non-homogeneous target are is a region of a living tissue and that the distinguishable regions are either different organs, tissue regions or blood and organ tissue.

Regarding claim 17 Madden discloses that the radiomarker can be thalium 201 and technetium 99 (see Col. 19, lines 48-51).

Regarding claim 18 Madden discloses that the image analysis unit is configured to ignore image data as being outside of target area is image data does not conform to at least one takeup characteristics (see Col.22, lines 1-67, Col. 23, line 1-Col. 24, line 49).

Regarding claims 19, 21, 22, 28, 30, 31 Madden discloses that the system is configured to use the mapping to identify at least one region of low emissivity to thereby concentrate imaging resources on the identified region, where the first mapping is to identify an organ and a second mapping is constrained within the organ (see Col. 27, line 1-Col. 29, line 10).

Regarding claims 20, 29 Madden discloses taking images of different regions of the target by moving the detector along the X and Y axis of the regions, which means that it allows for a voxel-by voxel imaging, and thus allows merging of voxels of identified regions.

Madden discloses as prior art using Geiger counters as pad of an imaging unit but fails to specifically disclose Geiger counters in his invention. However, since he discloses count measuring and intensity over time measuring, it would have been obvious to one having ordinary skill in the art to use Geiger counters in the imaging unit, since such counters are well known and used in the art. Madden discloses a controller that controls the direction of the detectors to take images from different locations to obtain 3D spatial data for a given target.